# SKYWARN OPERATIONS MANUAL FOR CONNECTICUT


# Version 1.1.1 (March 2010)

National Weather Service Forecast Offices
Albany, NY. Upton, NY. Taunton, MA.

**This manual covers SKYWARN operations in the following counties in Connecticut**
**Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.**

# Table of Contents

# ACKNOWLEDGEMENT

This manual is a modified version of the NWS Albany NY SKYWARN Operations Manual that was created in part by the late Stephen Pertgen who was a Forecaster, SKYWARN Coordinator, and Amateur Radio Operator at the Albany NY Forecast Office. The SKYWARN program state and county coordinators in Connecticut gratefully acknowledge all of the NWS Forecasters in the offices covering our state who through their professionalism and dedication strive daily to provide the residents of Connecticut with the most accurate and timely weather forecasts, watches, warnings, and advisories related to severe weather events that may have an impact on our lives and property.

# I. INTRODUCTION and ORGANIZATION

## 1.1 Purpose of This Manual

This manual is designed to be used as a reference guide for SKYWARN operations in the eight counties of Connecticut that fall under the National Weather Service (NWS) Albany NY, Upton NY, and Taunton MA, Forecast Offices warning area of responsibility. As a reference, it will never be complete and it is expected that individual counties will supplement this manual with their own internal policies and procedures, keeping the bi-directional flow of critical information moving smoothly and un-impeded.

SKYWARN in Connecticut has an area of responsibility that encompasses eight counties within the state. This area of responsibility extends across the entire state from the borders of New York, Massachusetts, and Rhode Island.

Training cannot, and should not, take place "on the job" during severe weather. Proper training is essential for the effective flow of information between SKYWARN spotters and the NWS and/or emergency management personnel. This includes training for spotters as well as net control volunteers. To be effective, everyone in the SKYWARN "system" needs to know their roles BEFORE severe weather strikes.

## 1.2 Purpose of SKYWARN

SKYWARN is the NWS national program of trained volunteer severe weather spotters. SKYWARN volunteers support their local community and government by providing the NWS with timely and accurate severe weather reports. These reports, when integrated with modern NWS technology, are used to inform communities of the proper actions to take as severe weather threatens. SKYWARN, formed in the early 1970's, has historically provided critical severe weather information to the NWS in time to get the appropriate warnings issued. Thus the key focus of the SKYWARN program is to save lives and property through the use of the observations and reports of trained volunteers.

Each NWS forecast office runs its own SKYWARN program. It is a goal and a challenge to continually improve the SKYWARN system and to integrate new technologies and procedures to best fulfill SKYWARN's mission of saving lives and property. This includes but is not limited to; linked repeater systems, IRLP and VOIP (Voice over Internet Protocol).

## 1.3 Role of Amateur Radio in SKYWARN

Amateur radio has been, and always will be, a critical component of the SKYWARN program. In Connecticut we are extremely fortunate to have a large number of trained SKYWARN spotters who are also amateur radio operators. This dual role for amateur radio operators is a natural result of their inherent interest and fascination with natural and scientific phenomena (especially the weather!) and with cutting edge technology such as Doppler radar and lightning detection devices. When this fascination is combined with the ability and desire to be trained to communicate severe weather observations via amateur radio in a professional and effective manner, the synergy is hard to duplicate. Finally, amateur radio operators have a long history of using their training, skills and equipment in uncompensated public service to help the community at large, which is precisely the focus of the SKYWARN system.

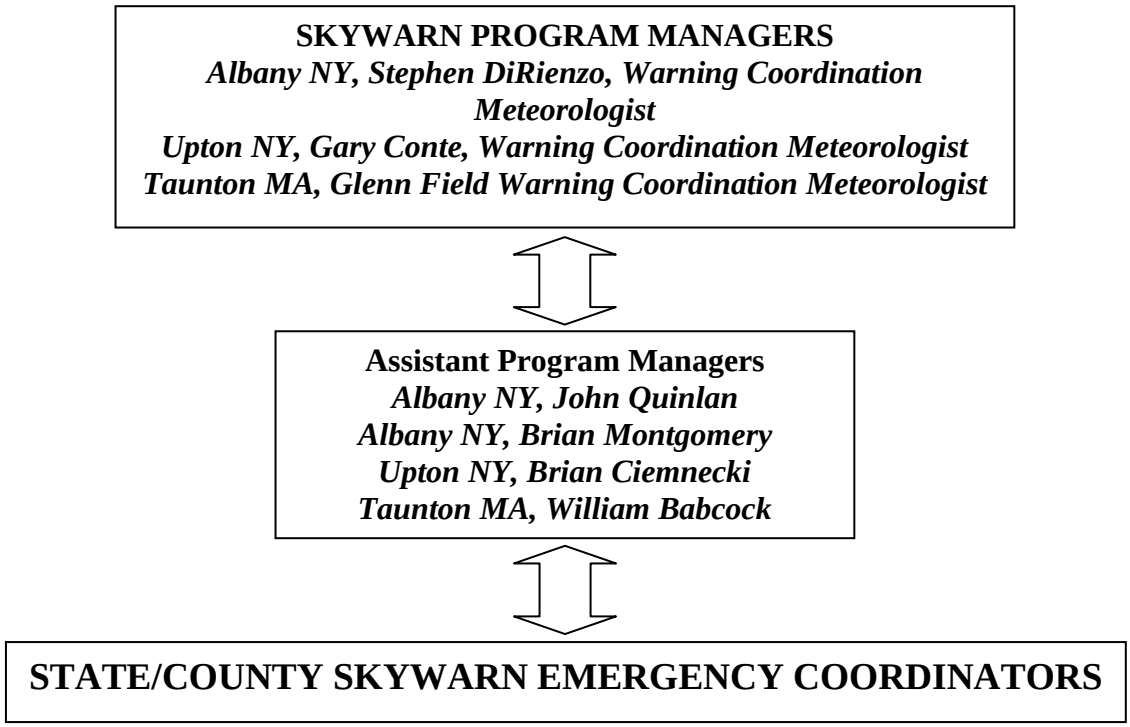
The close working relationship between the NWS and the amateur radio community provides many special benefits to each group. These benefits are highlighted in the following goals for the SKYWARN Amateur Radio operations:

1. To provide the NWS with timely and accurate severe weather reports via amateur radio. This includes both; incoming reports of severe weather per the NWS criteria; and amateur radio operators making observations at specific locations in response to a NWS request. For example, amateurs have often been asked to monitor river and creek flooding situations at certain critical points.
2. To create and maintain an organized communication network for passing critical severe weather traffic in a timely fashion to and from the NWS in the event that normal communications have been interrupted. The NWS has lost normal communications services in the past and it is likely that SKYWARN Amateur Radio Nets would be activated in future communications emergencies.
3. To disseminate warnings and weather statements issued by the NWS to the amateur radio community. Every attempt is made to read special and severe weather statements issued by the NWS over the SKYWARN Nets, as well as updated storm movement information to keep amateurs informed of developing situations and to practice for situations when normal communications channels fail.
4. To organize and train amateur radio operators to prepare themselves and their families for disaster or emergency weather related situations so that they may be available to assist in emergency net operations. This preparedness training is critical if the SKYWARN system is to be expected to operate reliably during true emergency situations.

## 1.4 Organizational Structure of SKYWARN

SKYWARN is NOT a club. It is a true volunteer public service whose membership is open to all who wish to participate. All reports of severe weather through the SKYWARN system are appreciated. Scripts have been set up to outline the NWS criteria for severe weather on which observations are requested so that untrained observers may participate. Despite the scripts, all net participants are strongly encouraged to take advantage of the excellent, interesting and free training provided by the NWS covering basic and advanced SKYWARN training and organized specialized courses in winter storms and floods.

The structure of SKYWARN under the Albany NY, Upton NY, and Taunton MA, NWS jurisdictions are as follows:




## 1.5 SKYWARN's Relationship to ARRL/ARES/RACES/REACT

The Amateur Radio operator's participation in the SKYWARN program is formally acknowledged and encouraged in a Memorandum of Understanding (MOU) between The American Radio Relay League (ARRL) and the NWS. This agreement indicates that the ARRL will encourage its local volunteer groups operating as the Amateur Radio Emergency Services (ARES) to provide the NWS with spotters and communicators as requested by the NWS during times of severe weather.

Many civil disasters are a direct result of severe weather and/or are exacerbated by severe weather. Accordingly, the NWS may utilize the SKYWARN amateur radio operators not only to obtain and disseminate severe weather observations and warnings, but may also use the amateurradio operators to maintain close coordination with Emergency Managers under Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES).

Radio Emergency Associated Communications Teams (REACT) also supports SKYWARN. REACT nets may take reports of severe weather and relay them to the NWS either by normal communications modes (phone, Internet etc.) or by linking up with a REACT member who is also an amateur radio operator who can relay the severe weather information to a SKYWARN Net Control through the SKYWARN amateur radio frequencies. Although it may take some creativity and organization, the goal is to include all groups in the SKYWARN systems who wish to participate.

## 1.6 Role of SKYWARN Net Control (NCS)

SKYWARN Net Control is the critical role in any SKYWARN activation. It is a role that will always challenge all of an amateur radio operator's communications and technical skills. It is also an extremely responsible role in that the safety of lives and property may rest on the amateur's skills. Although this role is challenging, with proper training and experience, this role can also be extremely rewarding when a job is successfully completed.

It is the purpose of this manual to provide the general guidelines for SKYWARN operations. While consistency of procedures from net to net is important, no two SKYWARN activations will be exactly the same. Therefore, the net control operator has the authority and responsibility to do everything necessary, within FCC rules, to ensure that the SKYWARN mission is performed to the best of his or her abilities.

It is essential that SKYWARN net control operators be familiar with NWS procedures, to be able to do an effective job. As mentioned in section 1.1 training cannot, and should not, take place "on the job" during severe weather. Proper training is essential for the effective flow of information between SKYWARN spotters and the NWS forecasters.7Listed below are the requirements to be designated by the SKYWARN County Coordinator to operate as a Net Control Station for SKYWARN nets.

1. Maintain current SKYWARN spotter certification.
2. Be familiar with SKYWARN reporting criteria and NWS reporting procedures.
3. Assist the SKYWARN County Coordinator by acting as net control for weekly weather training nets in order to receive proper training to act as net control for SKYWARN nets.
4. Notify the SKYWARN County Coordinator of your contact information and availability to act as net control for SKYWARN nets.

## 1.7 Role of the SKYWARN State Coordinator (DEC)

The SKYWARN State Coordinator organizes the operation of the entire SKYWARN Amateur Radio community within all counties of the State of Connecticut for which the Albany NY, Upton NY, and Taunton MA, NWS offices are responsible. Specific duties of the SKYWARN State Coordinator includes, but is not limited to:

1. Keeping a set of recommended protocols and an operating manual up to date and ensure compliance
2. Coordinating simple, effective and efficient procedures for passing traffic between local SKYWARN nets and the NWS forecasters.
3. Sharing information, ideas, and protocols to develop the best possible local SKYWARN program.
4. Coordinating the activities of SKYWARN with ARES, RACES, REACT, and government agencies to best fulfill SKYWARN's goals.
5. Assist County EC's in the execution of their duties and act as a liaison with the NWS and other agencies.

This volunteer position is appointed by the NWS SKYWARN Program Manager and ARES, to ensure that the person chosen can work well with the NWS forecasters and management as well

as the amateur radio community. The person chosen for this position must possess superior coordination and communication skills and should be readily available to the NWS.

The SKYWARN State Coordinator is also responsible for making sure that a County Coordinator, Assistant County Coordinator, or designated Net Control Station within each county is on duty at all times to receive the NWS notification and to take appropriate action as requested by the NWS. This will often involve passing the SKYWARN activation instructions and trained net control volunteer lists from coordinator to coordinator when an out of town trip is expected. It is imperative that this position be covered at ALL TIMES!

### 1.8 Role of the SKYWARN County Coordinator (EC)

The SKYWARN County Coordinator organizes the operation of the entire SKYWARN Amateur Radio community within a specified county for which the Albany NY, Upton NY, and Taunton MA, NWS offices are responsible. Specific duties of the SKYWARN County Coordinator include, but are not limited to:

1. Keeping a set of recommended protocols and an operating manual up to date and ensure compliance.
2. Coordinating simple, effective and efficient procedures for passing traffic between local SKYWARN nets and the NWS forecasters.
3. Sharing information, ideas, and protocols to develop the best possible local SKYWARN program.
4. Coordinating the activities of SKYWARN with ARES, RACES, REACT, and government agencies to best fulfill SKYWARN's goals.
5. Assist SKYWARN Net Control Stations in the execution of their duties and act as a liaison with the NWS and other agencies.

This volunteer position is appointed by the NWS SKYWARN Program Manager and ARES, to ensure that the person chosen can work well with the NWS forecasters and management as well as the amateur radio community. The person chosen for this position must possess superior coordination and communication skills and should be readily available to the NWS.

The SKYWARN County Coordinator is also responsible for making sure that at least one Net Control Station is on duty at all times to receive the NWS notification and to take appropriate action as requested by the NWS. This will often involve passing the SKYWARN activation instructions and trained net control volunteer lists from the County Coordinator to an Assistant County Coordinator or to Net Control Stations when an out of town trip is expected. It is imperative that this position be covered at ALL TIMES!

## II. ACTIVATION of SKYWARN

### 2.1 NWS Decision to Activate SKYWARN

The NWS Albany NY, Upton NY, Taunton MA Forecast Offices activate SKYWARN when severe weather is expected to affect an area of their warning responsibility. See map at Appendix G of this manual. SKYWARN is activated for many forms of anticipated severe weather including tornadoes, severe thunderstorms, hurricanes, floods, and winter storms.

## 2.2 Activation Time Frames

For **short lead time events** (i.e., severe thunderstorms, tornadoes. and flooding), SKYWARN is activated when the **WATCH** is issued or when severe weather is probable. The lead time may vary from zero (0) to six (6) hours. SKYWARN operations could last for up to twelve hours for short term events.

During **long lead time severe weather events** such as hurricanes, stream and river flooding situations, and winter storms, SKYWARN is activated when the **WARNING** is issued. Lead time may be anywhere from zero (0) to twelve (12) hours. Long-term events may cause SKYWARN to be activated for extended periods of time possibly measured in days, such as during the Blizzard of '93.

## 2.3 NWS SKYWARN Activation Steps

Once NWS forecasters have made the decision to activate SKYWARN, the following action is taken by the forecasters:

The Hazardous Weather Outlook message is updated with the specifics and the last segment of the message, "Spotter Information Statement" is changed accordingly with activation information naming specific counties to be activated.

The Hazardous Weather Outlook message is a permanent part of the 24 HR NOAA Weather Radio broadcast cycle and is also on each NWS Forecast Office web page. Generally, if there is a threat of severe weather, it will be contained in the first segment of the message and the Spotter Information Statement will state that SKYWARN activation may be necessary later in the day. It is issued routinely by around 5 AM daily and is updated as necessary

This message alerts SKYWARN spotters and emergency managers to be on the lookout for severe weather and to be ready to pass reports to NWS by phone if nets are not in operation. Most of the watches and warnings that cause SKYWARN to be activated are tone alerted and will activate weather alert radios. SKYWARN participants are encouraged to obtain radios with this feature. The tone alert feature is tested each Wednesday between 11 AM and Noon by the NWS. Please make sure that your tone alert is functioning properly!

# Below is a listing of the NOAA Weather Radio transmitters that operate within the State of Connecticut.

| Call Sign | Site Name | Site Location | Frequency | Power |
|---|---|---|---|---|
| WWH33 | Cornwall | Mohawk Mtn. | 162.500 | 500 |
| WXJ41 | Hartford | Soapstone Mtn. | 162.475 | 300 |
| WXJ42 | Meriden | West Peak | 162.400 | 500 |
| KHB47 | New London | Pie Hill | 162.550 | 500 |

# Number of Stations in Connecticut = 4

## 2.4 SKYWARN County EC Activation Steps

1. The SKYWARN County EC, or his designate, receives notification and calls the NWS as necessary.
2. The EC is briefed by the forecaster on:
   a. Nature of expected severe weather;
   b. Expected onset of severe weather
      (Immediate or later in day)
   c. Expected duration of event;
3. The SKYWARN County EC or his designate, assesses the situation and takes the appropriate action for his/her county SKYWARN operations, activating a SKYWARN net or contacting personnel to run a net.
4. Meanwhile, if a SKYWARN County EC or designate determines that a severe weather report, such as a funnel cloud, needs to be made known to the forecasters IMMEDIATELY, and a SKYWARN Amateur Radio Net has not yet been activated, please make sure that the NWS is informed of the traffic by telephone.

### 2.4.1 Net Control Operator Personnel List

The SKYWARN County EC's will maintain a list of personnel available at specific times to run a SKYWARN net.

# III. SKYWARN PROCEDURES AND PROTOCOLS

## 3.1 Operating Rules for County or Regional SKYWARN Nets

The normal net protocols will be utilized on all nets. Above all else, common courtesy must be exercised. The NWS relies on the SKYWARN spotters for critical information which could impact life and property. An organized effort to channel this information to the NWS must be in place in order for all to benefit from the SKYWARN operation.

As mentioned elsewhere in this manual, the County EC or his/her designate, is responsible for the SKYWARN net operation. It is assumed that permission has been granted, prior to SKYWARN operations, by the various repeater trustees, licensees or owners, for the use of said repeaters. It is the responsibility of the County EC's to gain that permission. It is also the responsibility of the County EC's to ensure that backup communications are available, such as other repeaters or other bands.

Unless the controlling interests of specific repeaters feel it necessary, or unless the conditions warrant it, no repeater should be dominated by SKYWARN activities. In most instances, normal amateur communications can continue with only an informal SKYWARN net in operation. Only during particularly severe weather such as a tornado on the ground or significant damage from severe thunderstorms or flooding, should the SKYWARN net transition to a formal (directed) net.

The operator of a SKYWARN Amateur Radio Station located at any of the NWS Forecast Offices will, when roving for reports, check into specific nets within Connecticut for reports or to read warnings or statements, following net protocols. If no net is in progress, the operator will make a general call for information, or make an announcement that specific information is available and ask if anyone is present to receive it. The operator will not initiate any net. The

SKYWARN State Coordinator shall follow the same procedures. Only amateur radio operators that have been designated by the SKYWARN County Coordinator to act as a net control operator for SKYWARN will activate a SKYWARN net. In a county where the SKYWARN County Coordinator position is vacant, the SKYWARN State Coordinator or Assistant State Coordinator will assume the responsibility for designating net control operators for SKYWARN nets.

There will be instances when communications problems will prevent SKYWARN spotters from communicating with SKYWARN nets in their own counties and or the NWS. In that case, it is highly desirable that those reports being received by SKYWARN nets in another county be handled in the same way as all reports for NWS in that county. In so doing, the report will be relayed by the NWS Forecast Office receiving the report to the NWS Forecast Office that is responsible for the area the spotter was reporting from, i.e., Albany, Boston, or Brookhaven (NYC). This is a common practice throughout the NWS.

SKYWARN spotters should also be familiar with the other methods of communicating with NWS in the event that a SKYWARN net is not operating within their county. These methods include:

1. Use of the private 800 spotter line phone number provided to you during SKYWARN Spotter Training.
2. Use of the Internet Spotter Reporting Forms located on the web page of the NWS Forecast Office covering your county.

## 3.2 Situational Awareness/Disaster Intelligence

During a SKYWARN activation spotters may be become aware of significant storm related damage that has occurred within a community or county. Awareness / intelligence may come from a spotters own observations or from confirmed reports of damage from other sources.

Examples of significant damage that spotters may become aware of are:

1. Major roadways leading into or out of a community that becomes blocked or impassable due to downed trees, power lines, utility poles, major snowfall or flooding conditions.
2. Loss of power and/or telephone communication to large portions of or an entire community.
3. Loss or damage to community infrastructure including buildings for public safety, government, schools, and hospitals, public safety radio communications equipment, and damage to bridges or roadways washed out from flooding.
4. Evacuations from storm damaged areas and the opening of shelters within a community.

Spotters should report this type of information to a SKYWARN net or directly to NWS so it can be passed onto State Emergency Management Officials. **Do not report storm related fatalities over the air use the 800 number to report directly to NWS.**

## 3.3 Local Weather Nets/Self Activation

The weather is very difficult to predict! Local severe weather, such as flooding or severe thunderstorms, may develop suddenly without the NWS issuing a watch or warning, or be too localized for the NWS to activate SKYWARN.

The following is the recommended procedure for implementing local area weather nets.

The activation of a local area weather net should be coordinated on the local level with an ARES EC and the repeater licensee, preferably in advance of the weather emergency. To be successful and to serve the NWS in the best possible manner, the program needs to be self policing. Therefore, the structure should be similar to any SKYWARN net where there is one Net Control station and one assistant to make sure that severe weather reports are relayed to the forecasters.

Upon receiving reports of a serious local weather situation developing, the Net Control station should contact the NWS lead forecaster by telephone to:

1. Relay the weather information,
2. Confirm that the NWS has not activated SKYWARN and will not do so. (AFTER having listened to available sources.)
3. Receive a request from the lead forecaster that a localized area of severe weather is in your location and that reports are needed.

Please give the lead forecaster your name, call sign and telephone number and indicate that you are the contact person for running a local weather net on a particular frequency in a particular area. The forecasters may wish to listen to the net "live."

Please designate the area as a local area weather net and not as a SKYWARN Net. This notifies participants that any critical weather information needs to be relayed to the NWS by telephone and not by amateur radio as most likely, there is no one listening to the Amateur Radio Station at the NWS.

If SKYWARN is activated after a local area weather net is in progress, the local area net should transition to a SKYWARN Net.

To be effective, the participants in the local area weather net should have completed SKYWARN Basic Spotter Training.

## 3.4 Handling Non-Severe Weather Reports

Many of the reports received are for non-severe weather. Please be courteous to the report giver and note the amateur's location as you may need to contact the amateur(s) if the storm moves in their direction. As the moment dictates, it may be necessary in periods of extremely severe weather to only take reports from specific areas of interest to the NWS or only reports of severe weather. If the situation arises, please do not be shy about informing the net participants of the exact nature of the information needed and that the only report you will take must meet the severe weather criteria. Please indicate when the net is reopened for all traffic.

## 3.5 Ending SKYWARN Operations

When the severe weather situation calms down the station operating a SKYWARN net can secure the net. At that time, the operator should perform the following shutdown steps:

1. Ask for any additional reports of severe weather.
2. Notify all amateur stations monitoring the net that SKYWARN operations are ending and that any further reports of severe weather must be telephoned into the NWS.

# IV. SKYWARN HF OPERATIONS

HF Amateur Radio Stations have been set up at the NWS Forecast Offices for use as backup during major communications outages, contact with government agencies during widespread events. They also serve as the primary means of communications with other NWS Forecast Offices and areas that are not reachable on VHF, as well as for MARS and SHARES.

# V. PUBLICITY and PUBLIC RELATIONS

An important facet of SKYWARN operations is public relations. SKYWARN provides ample opportunities to demonstrate the unique capabilities of amateur radio as well as the volunteer and public spirit of amateur radio operators. If you speak with the press, please be extremely careful what you say because you represent the entire amateur community and the SKYWARN program. If you have any questions, please contact a forecaster BEFORE speaking with the press.

There are constant challenges to the radio frequencies set aside for amateur radio use. SKYWARN provides an identifiable and extremely visible opportunity for pursing amateur radio in its best light. Severe weather is always of interest to the media. As a direct result of SKYWARN activities, generally, and SKYWARN participation in training exercises, as well as region wide communication drills in particular, and demonstrated professionalism and results as noted in NWS weather statements and reports on severe weather events, a number of Emergency Operations Centers have recognized the benefits of having amateur radio capabilities at their disposal. Thus, the SKYWARN program not only benefits the NWS and the public, but also helps to preserve amateur radio as a national resource.

The NWS does its best to promote the capabilities of the SKYWARN amateur radio net. NWS works closely with FEMA, the American Red Cross, the FCC in Emergency Broadcast Communications and with numerous state and local emergency management agencies. Therefore, SKYWARN has been, and will continue to be, an important vehicle to showcase amateur radio to the agencies involved in the allocation of privileges and frequencies.

SKYWARN has developed a large following of scanner enthusiasts, emergency managers and amateur radio operators. Let us continue to put Amateur Radio's "best foot forward."

# APPENDIX A - KEY SKYWARN POSITIONS IN CONNECTICUT

SKYWARN State Coordinator (DEC) .....Steve Williams K1SJW

SKYWARN Assistant State Coordinator (ADEC).....Jim McBride KD1LD

Fairfield County Coordinator (EC).....Roger Mitchell NG1R

Hartford County Coordinator (EC).....Roger Jeanfaivre K1PAI

Litchfield County Coordinator (EC).....Albert Petrunti KA1TCH

Middlesex County Coordinator (EC).....Glenn Krieger N1HAW

New Haven County Coordinator (EC).....Glenn Krieger N1HAW

New London County Coordinator (EC).....Position Currently Open

Tolland County Coordinator (EC) .....Roger Jeanfaivre K1PAI

Windham County Coordinator (EC).....Bernard Dubb KB1DGY

# APPENDIX B – Connecticut SKYWARN VHF FM/ HF SSB Amateur Radio Frequencies Echolink/ IRLP nodes.

| COUNTY | DEMHS REGION | Primary | Secondary |
|---|---|---|---|
| Fairfield (South) | 1 reports to NWS Upton NY | 146.475 PL 100 (+1mg split) (Norwalk) | |
| Fairfield (North) | 5 reports to NWS Upton NY | 147.300 PL 100.00 (Danbury) | |
| Hartford | 3 reports to NWS Taunton MA | 146.790 - PL 82.5 | |
| Litchfield | 5 reports to NWS Albany NY | 145.370 – PL 77.0 | 146.850 PL 141.3 |
| Middlesex | 2 reports to NWS Upton NY | 145.290 - PL 110.9 (Linked to 147.505) | |
| New Haven | 2 reports to NWS Upton NY | 147.505 - PL 77.0 (Split 1 MHZ Down) | |
| New London | 4 reports to NWS Upton NY | 147.060 + PL 156.7 | 146.970 - PL 156.7 |
| Tolland | 4 reports to NWS Taunton MA | 146.790 - PL 82.5 | 147.000 + PL 127.3 |
| Windham | 4 reports to NWS Taunton MA | 147.225 + PL 156.7 | |

## Statewide Frequencies

| | |
|---|---|
| 146.535 MHZ | Statewide FM Simplex |
| 3.965 MHZ | Statewide HF SSB Primary |
| 3.973 MHZ | Statewide HF SSB Secondary |
| 7.280 MHZ | Statewide HF SSB Secondary |

Statewide NWS Liaison with local SKYWARN Nets 147.345 + PL 77.0 or any repeater in the KB1AEV Linked System

This system can also be linked to the N1ARA and K1SOX Repeater Systems.

## Echolink/ IRLP Nodes for CT SKYWARN Repeaters

| County | Repeater | Echolink IRLP Node # |
|---|---|---|
| Fairfield (South) | 146.475 | Echolink node… 107213 |
| Fairfield (North) | 147.300 | Echolink node 1037 IRLP 4593 |
| Hartford/Tolland | 146.790 | IRLP node…….. 4159 |
| Litchfield | 147.345 | Echolink node… 147345 |
| Litchfield | 146.850 | Echolink node… 146790 |
| New Haven/Middlesex | 147.505 | Echolink node… 7505 |
| New London | 147.060 | Echolink node… 90769 |
| Windham | 147.225 | Echolink node… 47825 |

## Weekly Weather Information & Training Nets

| County | | Repeater Day and Time |
|---|---|---|
| Fairfield | 146.475 | 1st Monday of the month following GNARC ARES Net |
| Hartford/Tolland | 146.790 | Every Thursday 9:00 P.M. |
| Litchfield | 145.370 | Every Thursday 8:00 P.M. |
| New Haven/Middlesex | 147.505/145.290 | Every Thursday 7:30 P.M. |
| New London | 147.060 | Every Wednesday 8:00 P.M. |
| Windham | 147.225 | Every Friday 8:00 P.M. |

# APPENDIX C - SKYWARN SCRIPTS

## C.1 SKYWARN INTRODUCTION SCRIPT #1 - SUMMER

(GENERAL REQUEST FOR REPORTS)

If a conversation is already in progress when you access a repeater, please wait for a break in the conversation and break into the conversation by giving your call sign and the proword "SKYWARN". When acknowledged by the user of the repeater, say the following:

THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET. THE NATIONAL WEATHER SERVICE HAS INDICATED THAT THERE MAY BE SEVERE WEATHER IN THE AREA OF THIS REPEATER. WOULD YOU MIND IF WE WERE TO ASK FOR SEVERE WEATHER REPORTS AT THIS TIME? < *OVER* >

Upon receiving the okay to proceed, state the following:

THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET THE NATIONAL WEATHER SERVICE HAS INDICATED THAT THERE MAY BE SEVERE WEATHER IN THE OPERATING AREA OF THIS REPEATER. I WOULD LIKE TO TAKE ANY REPORTS OF SEVERE WEATHER AT THIS TIME INCLUDING:

1. TORNADOES, FUNNEL CLOUDS, OR ROTATING WALL CLOUDS
2. HAIL (QUARTER SIZE OR LARGER)
3. WIND FIFTY (50) MILES PER HOUR OR GREATER
4. FLOODING
5. RAIN ACCUMULATION IN EXCESS OF ONE (1) INCH
6. DAMAGE BY WIND OR LIGHTNING, OR
7. DOWNED TREES OR POWER LINES

ANY STATION EXPERIENCING SEVERE WEATHER CALL SKYWARN NET CONTROL AT THIS TIME. THIS IS _____ (call sign). < *OVER* >.

Once you have received all reports available, read the following:

I PLAN TO PERIODICALLY CHECK IN ON THIS REPEATER AS CONDITIONS WARRANT. ON BEHALF OF THE NATIONAL WEATHER SERVICE _____ (Albany NY, Upton NY, Taunton MA) WEATHER FORECAST OFFICE AND THE SKYWARN PROGRAM, I THANK THE REPEATER LICENSEE FOR USE OF THE REPEATER AND THE AMATEUR RADIO COMMUNITY FOR GIVING SKYWARN TRAFFIC PRIORITY. THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET CLEAR.

# APPENDIX C - SKYWARN SCRIPTS

## C.2 SKYWARN INTRODUCTION SCRIPT #2 - WINTER

(GENERAL REQUEST FOR REPORTS)

If a conversation is already in progress when you access a repeater, please wait for a break in the conversation and break into the conversation by giving your call sign and the proword "SKYWARN". When acknowledged by the user of the repeater, say the following:

THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET. THE NATIONAL WEATHER SERVICE HAS INDICATED THAT THERE MAY BE SEVERE WEATHER IN THE AREA OF THIS REPEATER. WOULD YOU MIND IF WE WERE TO ASK FOR SEVERE WEATHER REPORTS AT THIS TIME? <*OVER*>.

Upon receiving the okay to proceed, state the following:

THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET. THE NATIONAL WEATHER SERVICE HAS INDICATED THAT THERE MAY BE SEVERE WEATHER IN THE OPERATING AREA OF THIS REPEATER. I WOULD LIKE TO TAKE ANY REPORTS OF SEVERE WEATHER AT THIS TIME INCLUDING:

1. SNOWFALL IN EXCESS OF TWO (2) INCHES
2. SEVERE ICING ON TREES, STREETS, OR POWER LINE
3. SLEET OR FREEZING RAIN
4. WIND IN EXCESS OF THIRTY (30) MILES PER HOUR
5. DOWNED TREES OR POWER LINES
6. IMPASSABLE OR CLOSED ROADS

ANY STATION EXPERIENCING SEVERE WEATHER CALL SKYWARN NET CONTROL AT THIS TIME. THIS IS _____ (call sign). < *OVER* >.

Once you have received all the reports available, read the following:

I PLAN TO PERIODICALLY CHECK BACK IN ON THIS REPEATER AS CONDITIONS WARRANT. ON BEHALF OF THE NATIONAL WEATHER SERVICE _____ (Albany NY, Upton NY, Taunton MA) WEATHER FORECAST OFFICE AND THE SKYWARN PROGRAM, I THANK THE REPEATER LICENSEE FOR USE OF THE REPEATER AND THE AMATEUR RADIO COMMUNITY FOR GIVING SKYWARN TRAFFIC PRIORITY. THIS IS _____ (call sign), NET CONTROL FOR THE _____ COUNTY SKYWARN NET CLEAR.

# Appendix D Connecticut SKYWARN Emergency Operation Plan for Hurricanes and Tropical Storms

## Authority

The Amateur Radio Emergency Service (ARES) is sponsored by the American Radio Relay League (ARRL) to fulfill the general responsibility of the Amateur Radio Service to be prepared to provide communications in an emergency. ARES exists for the purpose of providing supplemental communications for the public, government, and nonprofit organizations involved in emergency and disaster response, preparedness, and recovery.

The National Weather Service (NWS) is part of the National Oceanic and Atmospheric Administration (NOAA) of the United States Department of Commerce. The primary mission of the National Weather Service in part is to provide timely and accurate warnings of dangerous weather to the general public in order to protect lives and property.

SKYWARN is the spotter program sponsored by the NWS. Radio amateurs have assisted as communicators and spotters since its inception. In areas where tornadoes and other severe weather have been known to threaten, NWS recruits volunteers, trains them in proper weather spotting procedures and accepts the volunteers' reports during watches and episodes of severe weather. By utilizing the SKYWARN volunteers, the NWS has "eyes and ears" throughout the affected area in conjunction with NWS sophisticated weather monitoring equipment.

The ARRL has created a Memorandum of Understanding (MOU) with the National Weather Service. The MOU states the following:

A. The American Radio Relay League agrees to encourage its volunteer Field Organization appointees, especially the Amateur Radio Emergency Service, to contact and cooperate with Regional Weather Service Headquarters for the purpose of establishing organized SKYWARN networks with radio amateurs serving as communicators and spotters.

B. ARRL further agrees to encourage its Section management teams to provide specialized communications and observation support on an as-needed basis for NWS offices in other weather emergencies such as hurricanes, snow and heavy rain storms, and other severe weather situations.

C. The National Weather Service agrees to work with ARRL Section Amateur Radio Emergency Service volunteers to establish SKYWARN networks, and/or other specialized weather emergency alert and relief systems. The principle point of contact between the ARRL Section and local NWS offices is the Meteorological Services Division of the appropriate NWS Regional Office. The addresses of the Regional offices are listed below. The national contact for ARRL is the Public Service Branch, ARRL Headquarters, and Newington, CT 06111.

National Weather Service Eastern Region
NOAA
585 Stewart Avenue
Garden City, New York 11530
Tel: 516-228-5400

## Purpose

The purpose of the plan is to provide general and specific direction to the ARES District Emergency Coordinator (DEC) for SKYWARN and to the SKYWARN Emergency Coordinators (EC) of the eight (8) counties within Connecticut on the methods for communicating Ground Truth Information to the three (3) local National Weather Service forecast Offices (NWSFO) that cover Connecticut as well as to the National Hurricane Center in Miami Florida.

## Situation and Threats

Should the State of Connecticut be within the strike zone of a tropical storm or hurricane the National Hurricane Center (NHC) will issue Tropical Storm/Hurricane Watches and Warnings as the storm system approaches landfall. Before the storm system begins to affect the coastal and inland regions of the state the three local National Weather Service Forecast Offices will issue appropriate warnings for the counties within their County Warning Area of responsibility.

Some of the weather threats that SKYWARN spotters can be expected to report ground truth information on are as follows but not limited to:

> Sustained Measured Wind Speed, Peak Gusts, and Wind Direction, Barometric Pressure, Tornados and Wind damage, Storm Surge, Measured Rainfall, Coastal, and Interior Flooding, Impassable Roads, major power outages, damage to structures. Any other post storm damage that may be appropriate to report

## Safety

The primary concern of all SKYWARN spotters is to remain safe. The first rule of severe weather spotting and emergency communications is to protect yourself. Insure your own safety first; then and only then, communicate your observation. Spotters living in those areas that would be prone to the effects of coastal flooding and/or storm surge should plan to evacuate and seek shelter on higher ground. No SKYWARN spotter is expected to risk their own safety to report ground truth information to NWS.

## Concept of Operations

Fortunately with today's technology the approach of a tropical storm or hurricane will be well publicized before the storm system makes landfall. The SKYWARN DEC and County EC's should begin monitoring NOAA Weather Radio Broadcasts, NWS Hazardous Weather Outlooks, National Hurricane Center Statements, when it appears that a storm system is making its way up the Atlantic Coast towards New England.

The SKYWARN DEC and EC's should plan to disseminate NWS statements on the approaching storm system to all spotters by way of the SKYWARN email reflector and by use of the VHF/UHF Repeater frequencies normally used for SKYWARN nets throughout the state.

Spotters should be encouraged to check their radio equipment, alternate power sources, and stock up on batteries as they could be without power for an extended time period. Spotters should also be encouraged to stock up on supplies needed for a family disaster kit. Information on disaster kits and supplies can be found on the websites of FEMA and the American Red Cross.

Formal SKYWARN activation will occur only when requested by NWS. Once NWS has made a request for SKYWARN activation County Emergency Coordinators and Net Control Stations (NCS) should activate SKYWARN nets over the Amateur VHF/UHF Repeaters normally used for SKYWARN operations. SKYWARN nets if possible should remain active until the storm has ended. However Emergency Coordinators and Net Control Stations are not expected to risk their own safety in order to run a net. Net Control Stations and spotters should be prepared to switch to the SKYWARN Statewide Simplex Frequency 146.535 (FM Voice) should the SKYWARN repeater(s) within their county go down.

Spotters should be alerted that if a net is not operational within their county they should use whatever means are available to them to pass ground truth information to NWS. This could include use of the 800 spotter lines, Internet spotter report forms, or checking into SKYWARN nets in other counties. Spotters with HF capability may check into the CT ARES/SKYWARN HF net on 3.965 MHZ or the Hurricane Watch Net on 14.325 MHZ. Spotters with VOIP capability may check into the VOIP SKYWARN/Hurricane Net via Echolink Conference Node WX-TALK or IRLP Node 9219.

Spotters should be encouraged to report situational awareness and disaster intelligence that comes to their attention concerning the communities where they reside. This information should be passed on to NWS so that it can be forwarded to DEMHS and other disaster relief agencies.

County Emergency Coordinators and Net Control Stations should be aware that some SKYWARN frequencies may also be utilized by ARES in support of communications for the DEMHS Regional and local community EOC's. This will require sharing of the frequencies and arrangements of times for net call ups so as not to interfere with other nets.

Other agencies including DEMHS and local community EOCs may request weather information from SKYWARN Nets in order to assist them in disaster response. Every effort should be made to provide such information when requested.

Steve Williams CT ARES DEC SKYWARN

# APPENDIX E Hurricane Watch Net Procedures

Hurricane Watch Net and the operation at WX4NHC at the National Hurricane Center in Miami are manned entirely by volunteers. We activate whenever a system has achieved hurricane status and is within 300 miles of populated land mass or at the request of the National Hurricane Center.

**Net operations are conducted on 14.325 MHz, and when band conditions warrant, we move to 3.950 MHz.**

The Hurricane Watch Net serves two purposes:

1. To disseminate the latest National Weather Service advisories on active hurricanes in both the Atlantic and Pacific side of the Americas. This includes transmissions to any maritime amateur radio operators that may be in the affected area.
2. To gather real-time ground level weather conditions from amateurs in the affected areas and to get these reports to the National Hurricane Center via WX4NHC in a timely and accurate fashion.

Along with these weather reports, often come reports on damaged roads power outages, structural damage, phone and communications links, and of course reports on injuries and deaths. These non-weather report items are usually relayed to other nets in operation on 20, 40, and 80 who are focusing on Health & Welfare, or by the crew at WX4NHC to the appropriate agencies that stay in touch with the National Hurricane Center.

**Standard Operating Procedures for stations reporting from the affected area.**

Do not transmit on 14.325 unless asked to do so by the net control.

Any station located within 100 miles of the eye of the hurricane, or in a watch or warning area is encouraged to check in. Within this group, those who are already experiencing 30 kts or greater of wind or a falling barometer should definitely respond when the net control asks, "Are there any stations in the affected area needing a fill or wish to check in?"

As the hurricane approaches landfall, the net control will narrow requests to a specific area or ask only for stations experiencing certain conditions such as winds at 50 knots or greater.

**Reporting stations are requested to report the following elements of their observed weather conditions:**

Reporting Station:_____
Geographic Location:_____
Location (Latitude/Longitude):_____Degrees North _____Degrees West
Time of Observation:_____ (UTC time, please)
Sustained Wind Speed:_____ MPH or KPH (Over One Minute)
Gust Speed:_____ MPH or KPH
Wind Direction:_____ Degrees
Barometric Pressure:_____ Inches or Millibars
Comments:_____
From Operator:_____

Blank report forms are available at http://www.wx4nhc.org/

Please be familiar with the following prior to checking in to the net

1. Do not use VOX. Turn off VOX before checking into the Hurricane Watch Net. It seems, at least once during every hurricane, someone has VOX on and it is tripped by their two meter radio or some other service causing the Net to slow down with this interference.
2. If you hear what you believe to be intentional jamming of the net frequency, do not make reference to it, but simply ask the other station to repeat the transmission or missing parts to you. Jammers want recognition. If they don't get it they go off and find someone who will give them a reaction.
3. Use UTC time, not local 24 hour time, in all reports. If you are not sure of the UTC time, go ahead with your local time, but, please be sure to tell the net control that you are using local time.
4. If you are going to give a damage, injury, or casualty report and it is not based on your own personal observation, be prepared to provide time, name of person providing it, their call letters or official position, and if possible, a telephone number where this can be confirmed later.
5. No matter how many times you have already said it, always state whether your wind speed and direction is "measured" or "estimated" and whether it is "MPH" or "Knots."

   Note: Estimated wind speeds and direction are welcome but the Hurricane Watch Net and the Hurricane Center place top priority on "measured" reports from amateur stations. Varieties of weather station products are available on the market and can be easily located on the World Wide Web. We strongly recommend that reporting stations be prepared to provide "measured" data.
6. Please advise if your barometer has been calibrated recently.
7. If reporting wind conditions of 70 knots or more, be prepared to give the brand and type of weather station unit being used for this report.
8. Try to record the time of your most severe conditions, i.e., lowest barometer reading, highest sustained winds, or maximum gusts. When you are sure the worst has passed your location, please check back and report this either through the established route or directly on 14.325. The Center finds these follow up reports extremely valuable.
9. Under no circumstances place yourself in physical danger in order to report your local conditions.

# APPENDIX F SKYWARN REPORTING CRITERIA

Spotters are asked to report any occurrence of severe weather to your Skywarn™ EC, Skywarn™ Net Controller or directly to us at the NWS. These reports are of tremendous importance to us since they firmly tell us what the weather is like at the ground and aid us in understanding what we are seeing on our radar and satellite images. If you see any of the following eight types of events, please call us! These events are considered emergency traffic on the Ham network, please relay them to the NWS immediately.

- Tornadoes, Water Spouts, Funnel Clouds and Wall Clouds (either rotating or not).
- Damaging Winds that down trees, large limbs and power lines or any wind producing property damage.
- Hail of any size (1 inch/ quarter size or greater is severe level criteria)
- Lightning that produces damage, injury or death. (Do not report deaths over the air use the 800 spotter line)
- Flooding, Ice Jams, Bankfull Rivers or Streams.
- Measured Rainfall that exceeds 1.0 to 1.5 inches in a 4 hour period.
- Freezing Rain (all occurrences).
- Snowfall that exceeds 2 inches every 2 to 3 inches thereafter and final storm total
- Any other event that you feel may help us determine the severity of storms.

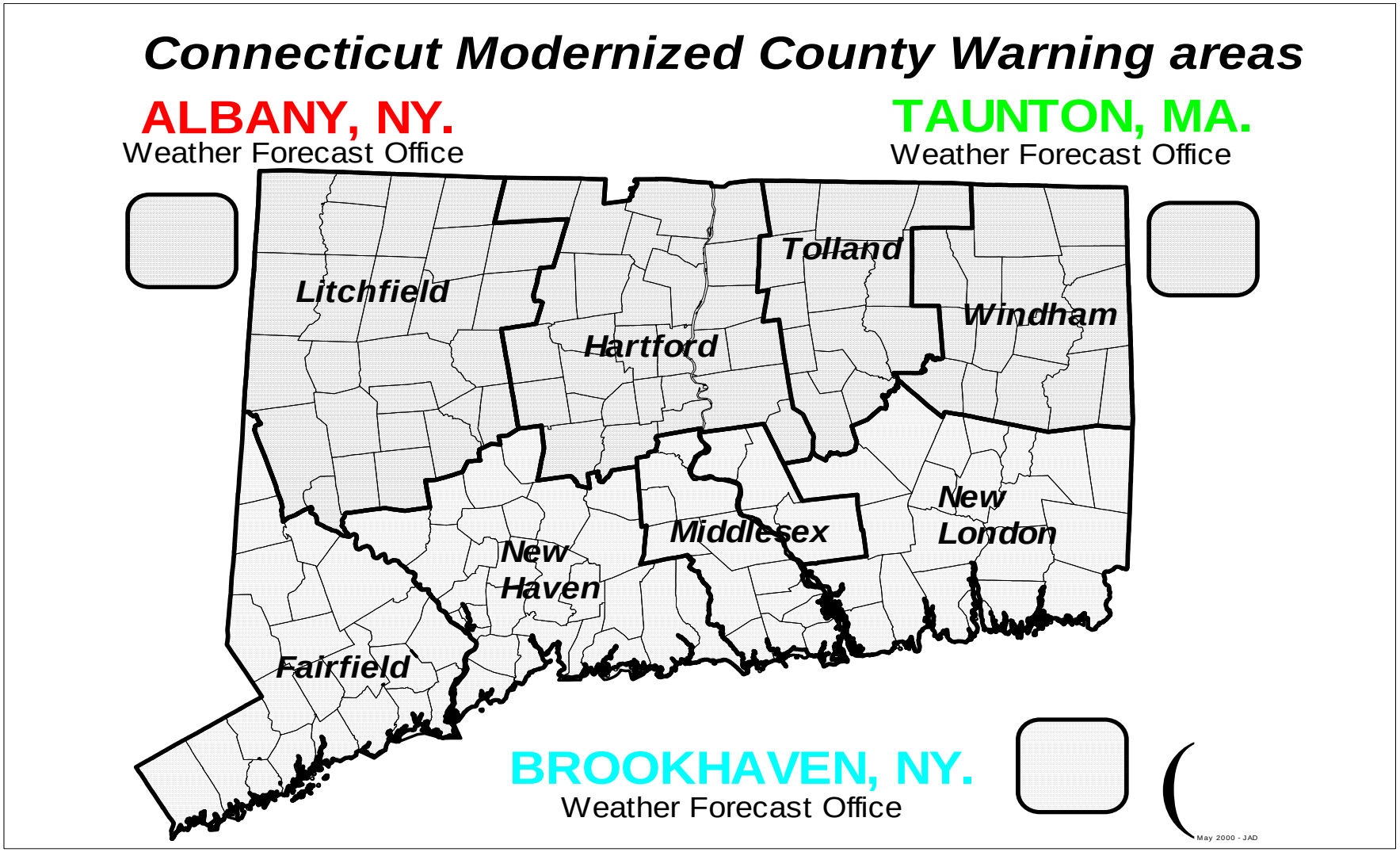
## Hail Size Chart

| Hail Diameter Size | Description |
|---|---|
| **1/4"** | **Pea** |
| **1/2"** | **Plain M&M** |
| **3/4"** | **Penny** |
| **7/8"** | **Nickel** |
| **1"** (severe) | **Quarter** |
| **1 1/4"** | **Half Dollar** |
| **1 1/2"** | **Walnut/Ping Pong Ball** |
| **1 3/4"** | **Golf Ball** |
| **2"** | **Hen Egg/Lime** |
| **2 1/2"** | **Tennis Ball** |
| **2 3/4"** | **Baseball** |
| **3"** | **Teacup/Large Apple** |
| **4"** | **Grapefruit** |
| **4 1/2"** | **Softball** |
| **4 3/4"- 5"** | **Computer CD-DVD** |

# APPENDIX G  Estimating Winds Speeds with Visual Clues

| Estimating Wind Speeds with Visual Clues Table | | | |
|---|---|---|---|
| **Beaufort number** | **Description** | **Speed** | **Visual Clues and Damage Effects** |
| 0 | Calm | Calm | Calm wind. Smoke rises vertically with little if any drift. |
| 1 | Light Air | 1 to 3 mph | Direction of wind shown by smoke drift, not by wind vanes. Little if any movement with flags. Wind barely moves tree leaves. |
| 2 | Light Breeze | 4 to 7 mph | Wind felt on face. Leaves rustle and small twigs move. Ordinary wind vanes move. |
| 3 | Gentle Breeze | 8 to 12 mph | Leaves and small twigs in constant motion. Wind blows up dry leaves from the ground. Flags are extended out. |
| 4 | Moderate Breeze | 13 to 18 mph | Wind moves small branches. Wind raises dust and loose paper from the ground and drives them along. |
| 5 | Fresh Breeze | 19 to 24 mph | Large branches and small trees in leaf begin to sway. Crested wavelets form on inland lakes and large rivers. |
| 6 | Strong Breeze | 25 to 31 mph | Large branches in continuous motion. Whistling sounds heard in overhead or nearby power and telephone lines. Umbrellas used with difficulty. |
| 7 | Near Gale | 32 to 38 mph | Whole trees in motion. Inconvenience felt when walking against the wind. |
| 8 | Gale | 39 to 46 mph | Wind breaks twigs and small branches. Wind generally impedes walking. |
| 9 | Strong Gale | 47 to 54 mph | Structural damage occurs, such as chimney covers, roofing tiles blown off, and television antennas damaged. Ground is littered with many small twigs and broken branches. |
| 10 | Whole Gale | 55 to 63 mph | Considerable structural damage occurs, especially on roofs. Small trees may be blown over and uprooted. |
| 11 | Storm Force | 64 to 75 mph | Widespread damage occurs. Larger trees blown over and uprooted. |
| 12 | Hurricane Force | over 75 mph | Severe and extensive damage. Roofs can be peeled off. Windows broken. Trees uprooted. RVs and small mobile homes overturned. Moving automobiles can be pushed off the roadways. |

**APPENDIX H**


Connecticut Modernized County Warning areas
ALBANY, NY.
Weather Forecast Office
TAUNTON, MA.
Weather Forecast Office
Litchfield
Tolland
Windham
Hartford
New Haven
Middlesex
New London
Fairfield
BROOKHAVEN, NY.
Weather Forecast Office
May 2000 - JAD

# APPENDIX I

**SKYWARN Net Log**

Date: Type: Start: End:

| Callsign | Name | QTH | Time of Observation/Weather/Comments |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Notes:

# Appendix J

## Weekly Weather Net Log

Date: NCS: Time

| Callsign | Name | QTH | Temp, Skycover, Wind Direction/ Speed, Precip., Barometer PressureOther |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Notes:

## APPENDIX K

# SKYWARN NET CONTROL STATION SIGN UP LIST

| NAME AND CALL SIGN<br><br>PRINT | PRIMARY CONTACT<br><br>PHONE NUMBER | EMAIL ADDRESS OR ADDITIONAL CONTACT PHONE NUMBER | D=WEEK DAYS<br>N=WEEK NIGHTS<br>WE-D=WEEK END DAY<br>WE-N=WEEK END NIGHT<br>CHECK BOX WHEN AVAILABLE | | | |
|---|---|---|---|---|---|---|
| | | | D | N | WE-D | WE-N |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |